DOCUMENT RESUME

ED 103 714 CE 003 337

TITLE	Wall Construction; Carpentry: 901892.
INSTITUTION	Dade County Public Schools, Miami, Fla.
PUB DATE	9 Oct 74
NOTE	21p.; An Authorized Course of Instruction for the Quinmester Program. For related documents, see CE 003 212-4, CE 003 233-6, and CE 003 341
EDRS PRICE	MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS	Architectural Drafting; Building Plans; *Building Trades; *Carpenters; *Construction (Process); Construction Industry; Course Content; Course Objectives; *Curriculum Guides; Masonry; Secondary Education; Skill Development; Structural Building Systems; *Trade and Industrial Education
IDENTIFIERS	*Quinmester Program

ABSTRACT

The curriculum guide outlines a course designed to provide instruction in floor and wall layout, and in the diverse methods and construction of walls. Upon completion of this course the students should have acquired a knowledge of construction plans and structural foundations in addition to a basic knowledge of mathematics. The course consists of eight blocks of instruction (introduction to wall construction, concrete walls and columns, bearing walls, partitions, frame walls, floor framing, applied mathematics, and a quinmester post-test) 135 hours in total length. Teaching methods vary according to the individual ability of the students. The instructor utilizes such basic resource materials as demonstrations, lectures, textbooks, filmstrips, and slides. Also presented are the course goals, specific block objectives, and a course outline. A bibliography and a sample post-test are appended. (Author/BP)

BEST COPY AVAILABLE

JAN 14 1975

ED103714

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

Course Outline

CARPENTRY - 9163
(Wall Construction)

Department 48 - Quin 901892

DADE COUNTY PUBLIC SCHOOLS

DIVISION OF INSTRUCTION • 1974

CE003337

ED1037714

D A D E C O U N T Y P U B L I C S C H O O L S

1 4 5 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

CARPENTRY - 9163
(Wall Construction)

Department 48 - Quin 901892

county office of

VOCATIONAL AND ADULT EDUCATION

THE SCHOOL BOARD OF DADE COUNTY

Mr. G. Holmes Braddock, Chairman
Mr. William H. Turner, Vice-Chairman
Mrs. Ethel Beckham
Mr. Alfredo G. Duran
Mrs. Phyllis Miller
Mr. Robert Renick
Dr. Ben Sheppard

Dr. E. L. Whigham, Superintendent of Schools
Dade County Public Schools
Miami, Florida 33132

October 9, 1974

Published by the School Board of Dade County

Course Description

9163	48	901892	Wall Construction
State Category Number	County Dept. Number	County Course Number	Course Title

Overview: A study of the purposees and the construction of different types of interior and exterior walls.

Objectives: Students will lay out, size and construct a basic section of interior and exterior walls.

Content: A study of the purpose and the construction of interior and exterior walls, columns, doors and windows.

Selection Considerations: Students in this course will be expected to have the skills and knowledge of building construction plans and structural foundations, in addition to a basic knowledge of mathematics.

PREFACE

This fourth quinmester course outline is designed to provide instruction in floor and wall layout, and in the diverse methods and construction of walls.

Students in this course will be expected to have the skills and knowledge of construction plans and structural foundations, in addition to a basic knowledge of mathematics.

This intermediate quinmester outline consists of nine quins. It is 135 hours in length, is divided into 8 blocks of instruction, and is further broken down into units.

Upon completing this course, the student will have understanding and knowledge of the principles of wall construction. A working vocabulary of the trade terms will have been gained, enabling the student success in carpentry.

The teaching methods vary according to the individual ability of the students. The instructor uses demonstrations and lectures. Textbooks, filmstrips and slides supplement this course.

The bibliography lists the basic references.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

TABLE OF CONTENTS
with Suggested Hourly Breakdown

	Page
PREFACE	i
GOALS	iii
SPECIFIC BLOCK OBJECTIVES	iv
BIBLIOGRAPHY	7
BLOCK -	
I. INTRODUCTION TO WALL CONSTRUCTION (10 hours)	
Wall Definition	1
Wall Types	1
Construction	1
II. CONCRETE WALLS AND COLUMNS (20 hours)	
Columns	1
Walls	2
Steel Reinforcement	2
Concrete Quality	2
III. BEARING WALLS (15 hours)	
Concrete	2
Block	2
Wood Frame	2
IV. PARTITIONS (20 hours)	
Block	3
Wood Frame	3
Movable Walls and Panels	3
V. FRAME WALLS (20 hours)	
Sole and Plate Layout	3
Assembly	4
Plumbing and Squaring Walls	4
VI. FLOOR FRAMING (25 hours)	
Beams	4
Joists	4
Floor Openings	5
VII. APPLIED MATHEMATICS (18 hours)	
Area and Volume in English and Metric Systems	5
Financial Costs	5
VIII. QUINMESTER POST-TEST (2 hours)	
APPENDIX - QUINMESTER POST-TEST SAMPLE	11

GOALS

The student must be able to demonstrate:

1. The ability to develop attitudes and skills to meet the present-day obligations of the carpentry trade.

2. A logical judgment in selecting and safely using tools and equipment.

3. The ability to advance in knowledge and skills through participation in this course.

4. Pride and respect in the carpentry trade and in related trades.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - INTRODUCTION TO WALL CONSTRUCTION

The student must be able to:

1. List 5 component parts used in constructing an outside frame wall with windows and doors.
2. Name three ingredients that must be used in making concrete.
3. Discuss at least two uses of walls for construction.

BLOCK II - CONCRETE WALLS AND COLUMNS

The student must be able to:

1. Compute the amount of a given concrete column.
2. Draw a floor plan showing an 8" block wall, centrally intersecting an 18" square column.
3. State the proper name for the metal used for reinforcing concrete.

BLOCK III - BEARING WALLS

The student must be able to:

1. Describe the construction and purpose of a bearing wall made of concrete.
2. Describe the construction of a block bearing wall having a flat arch opening.
3. Describe the construction of a wood frame bearing wall with a door and window.

BLOCK IV - PARTITIONS

The student must be able to:

1. Name three types of partitions.
2. List four component parts used to construct a partition.
3. Demonstrate knowledge concerning uses of partitions.

BLOCK V - FRAME WALLS

The student must be able to:

1. Lay out a sole plate for locating studs 16" O.C., including a corner post.
2. Nail in frame wall bridging and state two purposes for the bridging.
3. Demonstrate the squaring of a wall or partition with a measuring tape.
4. Explain why it is good precedure to lay out the top plate and sole plate together.

BLOCK VI - FLOOR FRAMING

The student must be able to:

1. List two reasons why cross bridging is used with floor joists.
2. Explain why floor beams are used and why columns are sometimes used with them.
3. Identify a joist, header, beam and bridging on a building construction plan.

BLOCK VII - APPLIED MATHEMATICS

The students must be able to:

1. Differentiate between English and metric measuring systems.
2. Prove ability to read a measuring tape.
3. Calculate the total amount of 2" x 4" lumber needed in linear feet for a given frame wall.

BLOCK VIII - QUINMESTER POST-TEST

BEST COPY AVAILABLE

Course Outline

CARPENTRY - 9163
(Wall Construction)

Department 48 - 901892

I. INTRODUCTION TO WALL CONSTRUCTION

A. Wall Definition
   1. Outside
      a. Formed concrete
      b. Precast concrete
      c. Concrete block
   2. Inside
      a. Concrete block
      b. Wood frame
      c. Metal frame

B. Wall Types
   1. Bearing
      a. Concrete block
      b. Block and concrete
      c. Metal columns and frame
      d. Wood columns and frame
   2. Non-bearing
      a. Concrete block
      b. Wood frame
      c. Metal frame
      d. Movable panel

C. Construction
   1. Wood frame
      a. Constructed on site
      b. Prefabricated in factory
   2. Outside panels
      a. Manufactured insulated metal
      b. Precast materials
   3. Inside panels
      a. Constructed on site
      b. Manufactured insuled wood

II. CONCRETE WALLS AND COLUMNS

A. Column
   1. Floor layout
      a. Correct measurements
      b. Squaring
   2. Column forms
   3. Plumbing walls
      a. Transit level
      b. Hand level

c. Scaffolds
(1) Metal portables
(2) Wood

B. Walls
1. Floor layout
a. Straightness
b. Door and window openings
c. Terminations and corners
d. Wall and column alignment
2. Concrete or block
a. Forms
b. Plumbing
3. Safe stripping

C. Steel Reinforcement - Building Code
1. Size of steel
2. Amount of steel
3. Location of steel
4. Bends and ties

D. Concrete Quality
1. Building codes
a. Slump test
b. Dropping heighth
c. Vibrating
2. Surface finish
a. Curing
b. Stripping method
c. Rubbing

III. BEARING WALLS

A. Concrete
1. Footing strength
2. Quality of concrete
3. Steel reinforcement
4. Wall design
a. Door and/or archway
b. Windows
c. Other openings

B. Block
1. Footing strength
2. Quality of column concrete
3. Quality of tie beam concrete
4. Steel reinforcement
5. Wall design
a. Door and/or archway
b. Windows

C. Wood Frame
1. Footing strength
2. Beam size

3. Size of posts
4. Stud spacing
5. Stud size
    a. Bracing
    b. Cripples
    c. Door and window headers
    d. Bridging or fire stops

IV. PARTITIONS

A. Block
    1. Purpose
        a. Room divider
        b. Partial divider
    2. Design
        a. Size of block
        b. Decorative block

B. Wood Frame
    1. Purpose
        a. Room divider
        b. Partial divider
    2. Design
        a. Stud layout
        b. Bridging or fire stops
        c. Opening headers
        d. Pass-through openings
    3. Surface finish
        a. Plywood
        b. Panel
        c. Plasterboard
        d. Lath and plaster

C. Movable Walls and Panels
    1. Room divider
        a. Doors
        b. Other openings
    2. Counter front or partial divider
        a. Booths
        b. Washroom

V. FRAME WALLS
A. Sole and Plate Layout
    1. Studs
        a. Common
        b. Window
        c. Door
        d. Jack
        e. Cripple
        f. Bridging or fire stop
    2. Corners and Intersections
        a. Corner post
        b. Intersecting post
        c. End post

3. Headers and sills
    a. Window
    b. Door
    c. Archway

B. Assembly
    1. Measuring and cutting
        a. Length
        b. Squaring
    2. Notching
        a. Pipes and tubing
        b. Electrical outlets and conduits
        c. Electrical and plumbing backing
    3. Fastening
        a. Face nailing
        b. Toe nailing
        c. Bolting and screwing
        d. Hurricane fasteners

C. Plumbing and Squaring Walls
    1. Angle bracing
        a. Temporary
        b. Permanent
    2. Measuring tape
    3. Framing square
    4. Hand level
        a. Fixture mounting
        b. Cabinet mounting

VI. FLOOR FRAMING

A. Beams
    1. Load
    2. Size
    3. Spacing
    4. Continuous
    5. Spliced
        a. Bolster
        b. Columns
        c. Column footings

B. Joists
    1. Foundation wall sills
        a. Pressure treated
        b. Stud anchored
    2. Header or skirt
        a. Joist layout
        b. Joist squaring
        c. Joist hangers
    3. Sizing
    4. Placement and nailing
        a. Bridging layout
        b. Temporary nailing
        c. Final nailing after flooring

C. Floor Openings
   1. Headers
   2. Trimmers
      a. Single
      b. Double
   3. Short beam

VII. APPLIED MATHEMATICS

A. Area and Volume in English and Metric Systems
   1. Area
      a. Building lot
      b. Footing surface
      c. Building floor
   2. Length
      a. Board feet
      b. Sizing
         (1) Addition
         (2) Subtraction
      c. Amount of lumber
         (1) Multiplication
         (2) Division

B. Construction Costs
   1. Hourly
      a. Tradesmen
      b. Laborers
      c. Office staff
   2. Contractual
      a. Contractors
      b. Engineers
      c. Architect
      d. Specialists
      e. Jobbers
   3. Materials
      a. Lumber
      b. Hardware and nails
      c. Tools
   4. Rentals
      a. Machinery
      b. Power hand tools
      c. Hand tools

VIII. QUINMESTER POST-TEST

BIBLIOGRAPHY
(Wall Construction)

Basic Reference:

1. Badzinski, Stanley, Jr. Carpentry in Commerical Construction. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974 Pp 292.

2. Badzinski, Stanley, Jr. Carpentry in Residential Construction. Englewood, Cliffs, New Jersey: Prentice-Hall, Inc., 1972. Pp. 308.

3. Blueprint Reading and Sketching, Carpentry Trades. Albany: Delmar Publishers, Inc., 1958. Pp. 260.

4. Durbahn, Walter E. Fundamentals of Carpentary, Vol. I. Chicago: American Technical Society, 1963. Pp. 510.

5. Durbahn, Walter E. Fundamentals of Carpentary, Vol. I. Chicago: American Technical Society, 1963. Pp. 523.

6. Study Guide in Carpentary, Vols. I and II. Chicago: American Technical Society, 1967. Pp. 750.

Supplementary References:

7. The American Builder. Bristol: Simmon-Boardman Publishing Co., 1967. Pp. 576.

8. Building Trade Math. Examination Problems. Florida: Department of Education, Federal Correctional Institution, 1969. Pp. 1194.

9. Modern Carpentry. South Holland, Illinois: Goodheart-Wilcox Co., 1968. Pp. 743.

10. Tools, Material, Ethics and History of the Trade, Unit I. Indianapolis: United Brotherhood of Carpenters and Joiners, 1959. Pp. 979.

A P P E N D I X

Quinmester Post-Test Sample

QUINMESTER POST-TEST

Name_____Date___/___/___Score_____

Multiple Choice

1. Trade terminology means
   a. technical terms of a trade
   b. terminals of electrical trade
   c. log terms for lumber
   d. logical term for using tools

2. A scaffold is a
   a. concrete chute
   b. trench for a footing
   c. a folding scale
   d. framework for supporting workers

3. A tool for plumbing walls is the
   a. scaffold
   b. saw horse
   c. level
   d. chalkline

4. A partition is a
   a. wall
   b. tool
   c. column
   d. partial joist

5. A stud is a
   a. small building
   b. large building
   c. wall part
   d. wall hardware

6. A header is nailed above a
   a. sole plate
   b. stud
   c. door
   d. fire stop

7. To find square feet, we multiply
   a. area x length
   b. W x H
   c. L x W
   d. linear x length

8. A tool for building wood walls is the
   a. framing square
   b. wood rasp
   c. wrecking bar
   d. wood plane

9. Bearing walls require a strong
   a. sole plate
   b. joist
   c. block
   d. footing

10. A transit is used for
   a. alignment
   b. nailing
   c. cutting
   d. framing

11. A nail popular in framing is the
   a. brad
   b. common nail
   c. finish nail
   d. galvanized nail

12. Long wall stud layouts require a
   a. framing square
   b. transit
   c. measuring tape
   d. folding rule

13. Studs sometimes require
   a. filing
   b. strong glue
   c. one nail
   d. toe nailing

14. Concrete walls are reinforced with
   a. studs
   b. wire
   c. steel rods
   d. steel wire

15. Floor joists are "laid out" on the
   a. top plate
   b. stud
   c. header
   d. beam

16. A double plate is located on
   a. floor openings
   b. frame walls
   c. steel columns
   d. sills

17. The "slump test" is used for
   a. soft concrete
   b. hard concrete
   c. angle
   d. wall lean

18. A lintel is located above a
    a. column
    b. beam
    c. joist
    d. window

19. Movable walls are normally used in
    a. private homes
    b. basements
    c. expansion closets
    d. commercial buildings

20. Joists are supported by
    a. door headers
    b. beams
    c. footings
    d. archways

21. Cripples are usually nailed to
    a. joists
    b. beams
    c. window headers
    d. corner post

22. Rental costs means charges for using
    a. material
    b. machinery
    c. office workers
    d. concrete

23. Cross bridging is used for
    a. doors
    b. studs
    c. beams
    d. joists

ANSWER KEY TO QUINMESTER POST-TEST

Multiple Choice Test Items

1. A
2. D
3. C
4. A
5. C
6. C
7. C
8. A
9. D
10. A
11. B
12. A
13. D
14. C
15. A
16. B
17. A
18. D
19. D
20. B
21. C
22. C
23. D